

EMOTIVA



WHERE PASSION
AND HOME THEATRE MERGE

IPS-1

PROFESSIONAL MULTI-CHANNEL AUDIO AMPLIFIER

USER'S GUIDE

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Safety Precautions

Read this User's Guide thoroughly before attempting to install and configure the Emotiva IPS-1 Modular Power Amplifier. All the safety and operation instructions should be read before any operation of the component(s) begin. After successful installation and configuration of the Emotiva IPS-1 Modular Power Amplifier, be sure to retain this manual in a safe place for any future reference needs.

All warnings on the Emotiva IPS-1 Amplifier and in these operating instructions should be followed. Safety is a key component to a long lasting and trouble free installation. The vast majority of the subsequent safety precautions involve simple common sense. If you are not comfortable with the installation of audio/video entertainment equipment, it will be to your benefit to seek the services of a qualified installation professional.

- *The Emotiva IPS-1 Amplifier should NEVER be used near water such as a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.*
- *The Emotiva IPS-1 Amplifier should be situated so that its location or installation position does not interfere with proper ventilation.*
- *The Emotiva IPS-1 Amplifier should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase, cabinet, or closed equipment rack that may impede the flow of air through ventilation openings. If installed in a closed equipment rack for custom installations, be sure to add forced air ventilation so that it has adequate air circulation.*
- *The Emotiva IPS-1 Amplifier should be situated away from heat sources such as radiators, or any other devices which produce heat.*
- *The Emotiva IPS-1 Amplifier should be connected to a power supply only of the type described in this User's Guide and what is labeled on the IPS-1 component. Power supply cords should be routed so that they are not in high foot traffic areas or pinched by items placed upon or against them, paying particular attention to cords at the wall plugs, convenience receptacles, and the point where they connect into the IPS-1 Amplifier. The power cord of the IPS-1 Amplifier should be unplugged from the outlet when unused for a long period of time.*

When it's time for cleaning the Emotiva IPS-1 Amplifier, it should be cleaned only as recommended in this User's Guide. Never spray liquids directly into the component's vent openings. Care should be taken so that small objects do not fall into the inside of the IPS-1 Amplifier.

The following situations require your Emotiva IPS-1 Amplifier is serviced only by qualified service personnel:

1. *The power-supply cord or the plug has been damaged; or*
2. *Objects have fallen, or liquid has spilled into the component; or*
3. *The IPS-1 has been exposed to rain; or*
4. *The IPS-1 does not appear to operate normally or exhibits a marked change in performance; or*
5. *The IPS-1 has been dropped, or its enclosure or chassis is damaged.*

The user should not attempt to service the IPS-1 Integrated Power Amplifier beyond the means described in this User's Guide. All other servicing should be referred to qualified service personnel.

To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Pour preevenir les chocs electriques ne pas utiliser cette fiche polarises avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent titre inserees a fond sans laisser aucune parllle a decouvert.

Grounding or Polarization — Precautions should be taken so that the grounding or polarization means of the component is not defeated.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de class A/de class B (selon le cas) prescrites dans le reglement sur le brouillage radioelectrique edicts par les ministere des communications du Canada.

For questions regarding service, please contact:

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WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

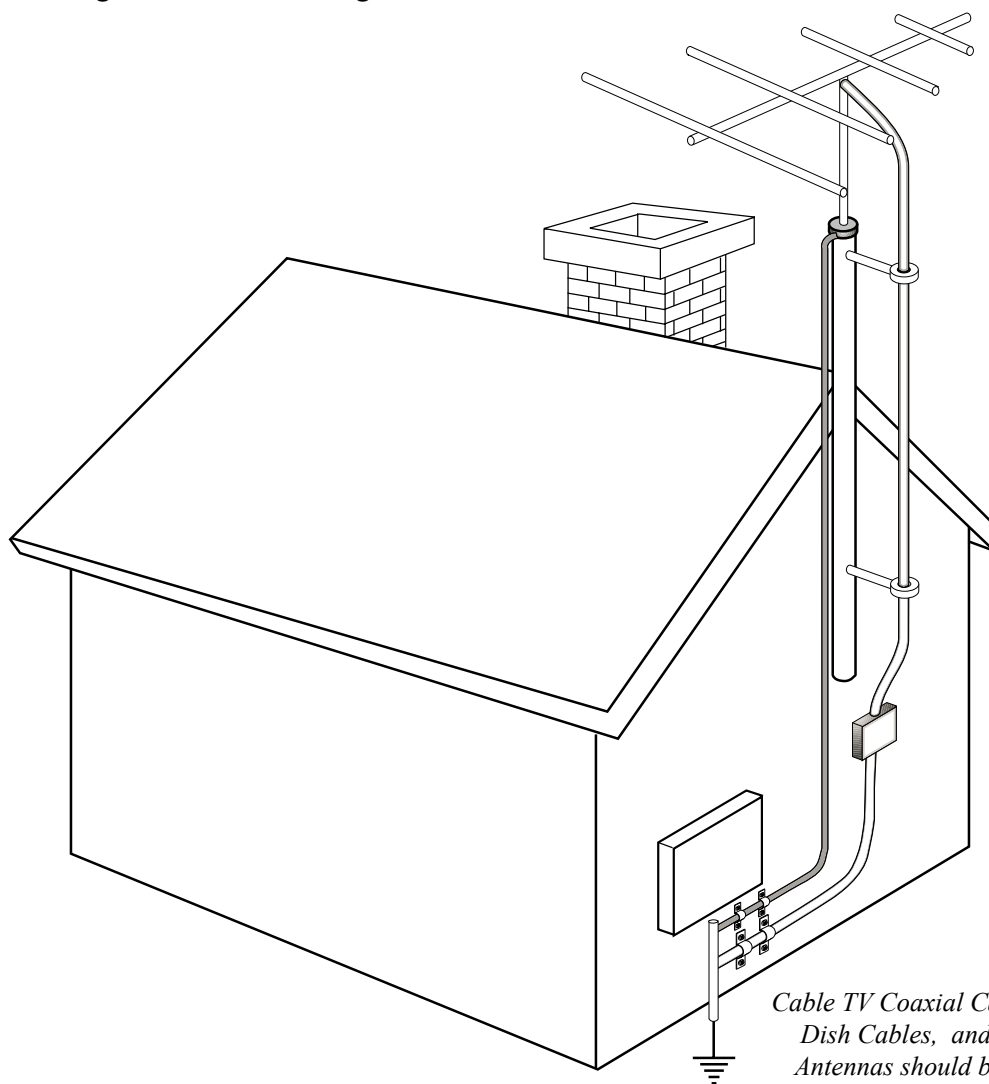
NEC (National Electrical Code) Standards

A Note for the Cable Television (CATV) Installer

This reminder is to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

Antenna Grounding Outside the House

If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the lead-in wire to an antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See diagram below.



Cable TV Coaxial Cable, Satellite Dish Cables, and Television Antennas should be grounded BEFORE the point of entry into the house.

Thank You for your IPS-1 Purchase

Dear Home Entertainment Enthusiast,

Thank you for purchasing the Emotiva IPS-1 Integrated Power Amplifier. We sincerely believe that it offers you outstanding performance and value. Emotiva products are engineered and produced with the highest quality materials and incorporate the latest technology. We think you will find the Emotiva IPS-1 meets or exceeds your expectations.



The Emotiva IPS-1 is a flexible, high performance amplifier. It has been designed for maximum performance, ease of use, and installation flexibility. By employing cutting edge technology, the Emotiva IPS-1 easily delivers music signals to your speakers at powerful levels, while at the same time remaining as efficient as possible, regardless of volume levels. This allows you to fully enjoy audio and video sources without concern for dynamic headroom during complex musical passages and high level effects. What's more, the Emotiva IPS-1 does it all with exceptionally refined cosmetics and a sound quality that will satisfy even the most discriminating tastes.

The Emotiva IPS-1 features an array of leading edge technologies and all the features necessary to perform the functions expected of a high end Integrated Power Amplifier.

The Emotiva IPS-1 Integrated Power Amplifier is a rock solid component that allows you to control and manage all of your system's speakers with 7 individual amplifier channels (each configured as a separate circuit board in a single amplifier chassis). This makes installation of your home entertainment system much easier than connecting multiple mono or two channel amplifiers. At Emotiva, we remember that creating home audio/video products means that they should be easy to use while delivering unparalleled performance.

Unpacking the IPS-1

The Emotiva IPS-1 Modular Power Amplifier should reach you in flawless condition. If you notice any shipping damage or other issues upon unpacking the unit, please contact your Emotiva Retailer immediately.

Gently lift out the unit and remove all the packing material and accessories. It is important to save all the packing materials and the box in case your Emotiva IPS-1 ever needs to be moved or shipped back to the factory for service.

Make sure that you keep your sales receipt. It is the only way for Emotiva to establish the duration of your Limited Warranty and it may come in useful for insurance purposes. Please take a moment to fill out and mail the Emotiva Customer Response card.

Recording the Serial Number

Please read the serial number located on the rear panel and record it below. Also record the place where you purchased this product and the date of purchase.

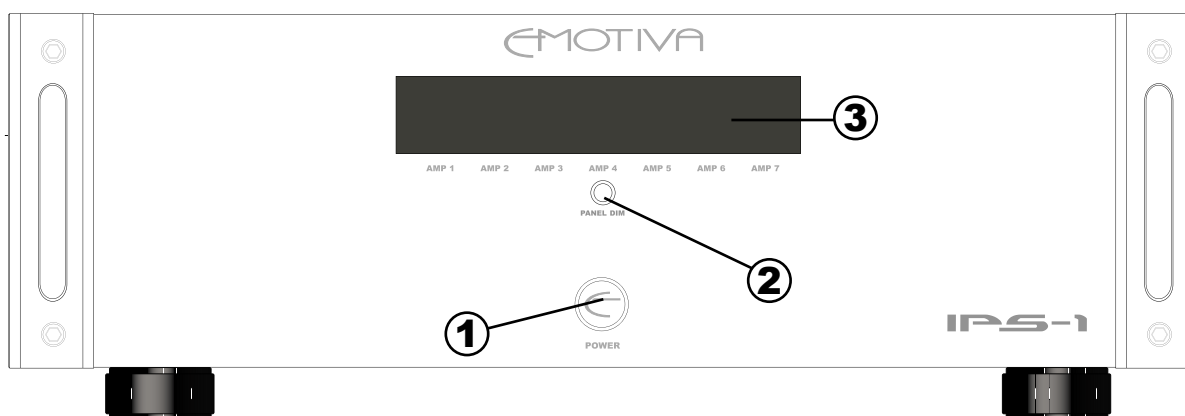
Model Number	IPS-1
Serial Number	
Place of Purchase	
Date of Purchase	

Emotiva IPS-1 Integrated Power Amplifier

Integrated-Modular Power Amplifier Features

- *A true audiophile quality power amplifier*
- *150 Watts x 7 into 8 Ohms*
- *200 Watts x 7 into 4 Ohms*
- *Completely stable into 2 ohm loads*
- *Each channel features independent 250VA, low noise toroid power transformers w/ high speed rectifiers and low ESR 105°C filter capacitors*
- *High efficiency Class H power amplifier design, minimizes power losses and allows cool and efficient operation*
- *Complementary, discrete power amplifier design incorporating high current, high speed, Toshiba power devices*
- *RCA inputs*
- *5 Way Binding Post speaker outputs*
- *Silent turn on/off - No audible transients*
- *THD less than .015%, 20Hz-20kHz with 80kHz measurement bandwidth*
- *DC offset, less than 1mv, servo controlled.*
- *Crosstalk between ANY two channels – greater than 120dB*
- *All aluminum capacitors are premium quality, low ESR, 105°C rated for high reliability and performance*
- *Doubled sided, plate through, glass epoxy, FR4 PCB's used throughout with 2 ounce poured copper on all power sections and ground planes*
- *Individual channel status indicators for standby, operate, and fault behind tinted acrylic panel*
- *Fully protected from all fault conditions*
- *Soft start circuitry*
- *Signal sensing auto turn-on or remote 12 VDC trigger.*
- *Soft touch power switch*
- *3RU chassis w/ solid milled aluminum faceplate*
- *IEC power inlet, 120 VAC-60Hz*

IPS-1 Front Panel Features



① Power Button

This turns the main power to the IPS-1 on or off. It is a main power button, but it is not required to turn this on and off each time the IPS-1 is used. When enabled, the AUTO ON/OFF MODE will automatically switch the amplifier on when an audio signal comes from a source or control unit (such as a preamplifier). The TRIGGER MODE will turn the amplifier on when an external source (such as a preamplifier) provides a 5-24 VDC input on the trigger terminals.

② Panel Dim Selector Button

This button selects the overall brightness of the lighting on the front panel of the IPS-1. The button has four steps, each consecutively after the other. The four levels of brightness are:

- High
- Medium
- Low
- OFF

Pressing the PANEL DIM button repeatedly will scroll through each level of brightness.

③ Amplifier Channel Display

This multi-color LED display behind a tinted acrylic panel shows states of any of the seven power modules on the IPS-1.

BLUE LIGHT: Power Module is on and ready.

AMBER LIGHT (middle row): Power module is powered on but is in a standby situation waiting for audio signal or external trigger.

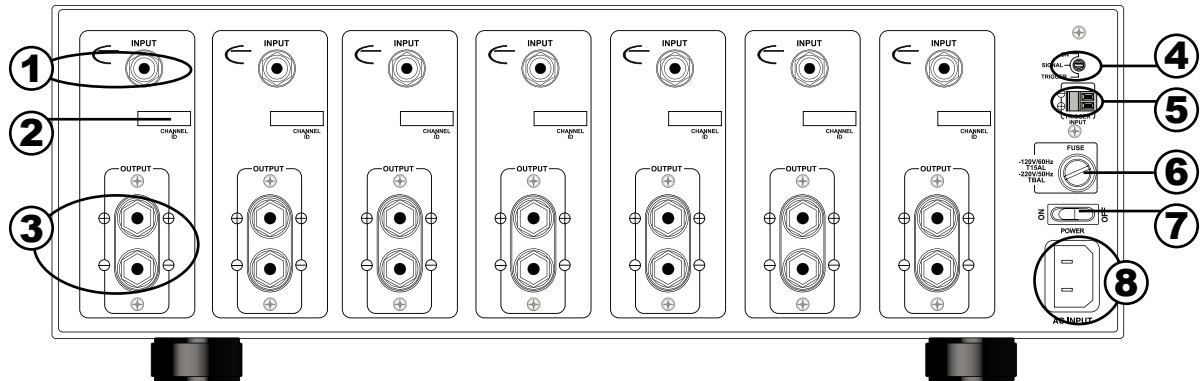
RED LIGHT: This indicates a fault condition. A fault condition is one or more of the following:

- Excessive Operating Temp
- Excessive Current (Short Circuit)
- DC on the Outputs

See the "Troubleshooting Section" for more details on the display.

*Note - When there is **NO LIGHT** - The power module's fuse is blown.*

IPS-1 Rear Panel Layout



① RCA Inputs

The IPS-1 has one RCA input available for each amplifier channel module. Connect this to the corresponding RCA jack on your preamplifier to provide signal to the amplifier channel. See page 15 for a connection diagram.

② Channel ID Area

The IPS-1 amplifier comes with self adhesive labels to use as channel identification. Simply apply the label that corresponds to the appropriate channel to this area and it will make I/O connections or future troubleshooting much easier.

③ Speaker Output Terminals

The speaker output terminals for each amplifier channel are located just below the RCA input jack and channel ID label area. The top post of each binding post pair is the positive output, and connects to the positive (red) post of your speaker. The bottom post of each pair is the negative, and connects to the negative (black) post of your speaker. The posts can accept bare wire, spade terminals, and dual or single banana connectors.

Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use "dual banana" plugs and "stack" them, you will be creating a parallel connection. For more details on series and parallel connections, see pages 17-18.

④ Turn On Selector Switch

This switch allows you to select how the amplifier will turn on and off.

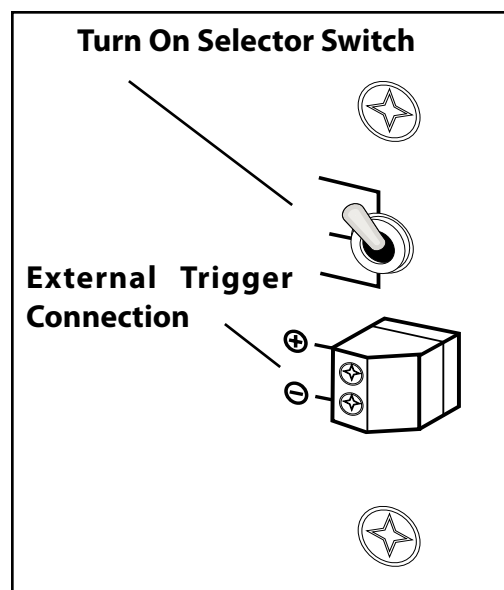
In the **ON** (Up) position, the switch on the front of the amplifier is the method you will use to power up and power down the amplifier. Please note that in this configuration, you must manually power up and power down the amplifier each time you use it or it will have unnecessary standby current draw.

In the **SIGNAL** (Middle) position, the amplifier automatically turns on whenever it senses an audio signal on any one of the seven amplifier channels. The circuit stays active for a 30 minutes after the absence of any audio signal to account for quiet passages of music or dialogue and muting the audio (for a phone call for example).

In the **TRIGGER** (Down) position, the amplifier's ON and OFF functions are controlled by a trigger from a source or preamplifier device. The trigger accepts 12 VDC and will turn the amplifier on whenever a trigger is present (See #5). When there is no trigger, the amplifier goes into standby mode. This is the preferred method for activating the IPS-1.

⑤ External Trigger Connection

This external trigger connection allows the amplifier to be turned ON and OFF by a control device such as a source unit or preamplifier. It can also be used with most home automation controllers. The trigger requires a 12 VDC trigger. This is the preferred method of activating the IPS-1. See page 16 for connection details.



⑥ Fuse

This fuse is for the power supply of the IPS-1 chassis. It is a TL15AL type rated a 15A Slo-Blo, 250 V. If the fuse ever fails, be sure to replace it with the same type and rated fuse.

⑦ Power Switch

This switch should remain in the ON position for normal operation of the IPS-1 amplifier. When you are away from your entertainment system for long periods, this provides a convenient way to switch the unit off without having to unplug power cords.

⑧ IEC Line Cord Socket

The IPS-1 comes with a detachable line cord which connects here. Plug the line cord into an AC wall socket which is correctly configured with the voltage and current supply specified for the IPS-1. Do not plug this line cord into a power strip, it must plug directly into a wall socket. For more details on AC power considerations, see page 13.

Installation and Connections

Observe the following precautions when choosing a location for your Emotiva IPS-1:

- 1) Protect it from prolonged exposure to direct sunlight and other direct sources of heat, such as heating vents and radiators.*
- 2) Do not expose the unit to rain or moisture. If fluid or a foreign object should enter the unit, immediately turn off the power and contact your Emotiva Dealer.*
- 3) Avoid excessive exposure to extreme cold or dust.*
- 4) Do not place heavy objects on top of the unit.*
- 5) If you need to clean the front surface, first turn off the power and then use a soft dry cloth, rubbing with the grain. Be careful not to scratch the display window.*

AC Power Considerations

Ensure that the unit is plugged into an outlet capable of supplying the correct voltage and current specified for your model. Remember to account for the electrical power that other components will require if they share a common wall socket or electrical circuit. The majority of household electrical sockets in places other than the kitchen and garage are 15 amperes maximum. Most DVD players and other source components are fairly low current items. When all seven amplifier channels are connected to speakers, the Emotiva IPS-1 requires a minimum of 15 amperes @ 120 volts or 8 amperes @ 230 volts. It should be sufficient to allow the other devices such as preamplifiers and A/V source units to share a wall socket, but power amplifiers such as the IPS-1 and a video display (big screen TV or video projector) should be provided a SEPARATE electrical connection on a SEPARATE circuit. As the IPS-1 has a minimum requirement that consumes one entire circuit, please use a second (separate) electrical connection for other devices. DO NOT plug the IPS-1 into a power strip or extension cord unless the device is specifically designed and rated for high current use.

Refer to your preamplifier, A/V source component(s), and video display owner's manuals to learn the power requirements so you can safely plan your electrical power requirements for your home entertainment system.

Input Connection Considerations

Whenever possible, keep preamp level audio cables away from electrical power cords by at least a few inches. It's more important with amplifiers as the AC power cords are carrying much more current than other source and preamplifier components, which means there is a larger degree of noise or "hum" potential with the amplifier power cord proximity.

Output Connection Considerations

The output connectors provided on each channel of the IPS-1 are standard “binding post” speaker connectors with industry standard spacing. These are sometimes called 5-way binding posts because of the many ways in which the speaker wire can connect into the posts. The posts can accept bare wire, spade terminals, and dual or single banana connectors. Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use “dual banana” plugs and “stack” them, you will be creating a parallel connection. For more details on series and parallel connections, see pages 17-18.

It is important to observe polarity so that the speaker wire connects to the red and black terminals on the amplifier and the corresponding terminals at the speaker. Also make sure that the positive speaker wires do not touch the negative speaker wires, or any chassis metal. This will cause a short circuit and activate the protection circuitry.

Ensure Adequate Ventilation

The Emotiva IPS-1 has the power amplifier components arranged in such a fashion to allow heat to rise off of the components and out through the top vents of the chassis. Bottom vents allow fresh air in to create a circulation of the heated air. While the surface area of the heatsink on each amplifier circuit board is very generous, we advise all installations to leave 2-3 inches above the top of the IPS-1 chassis so that adequate ventilation is supported. Furthermore, it is not advised to place another amplifier below the unit as that heat will have to also pass up through the IPS-1.

Connection Tips for Superior Sound

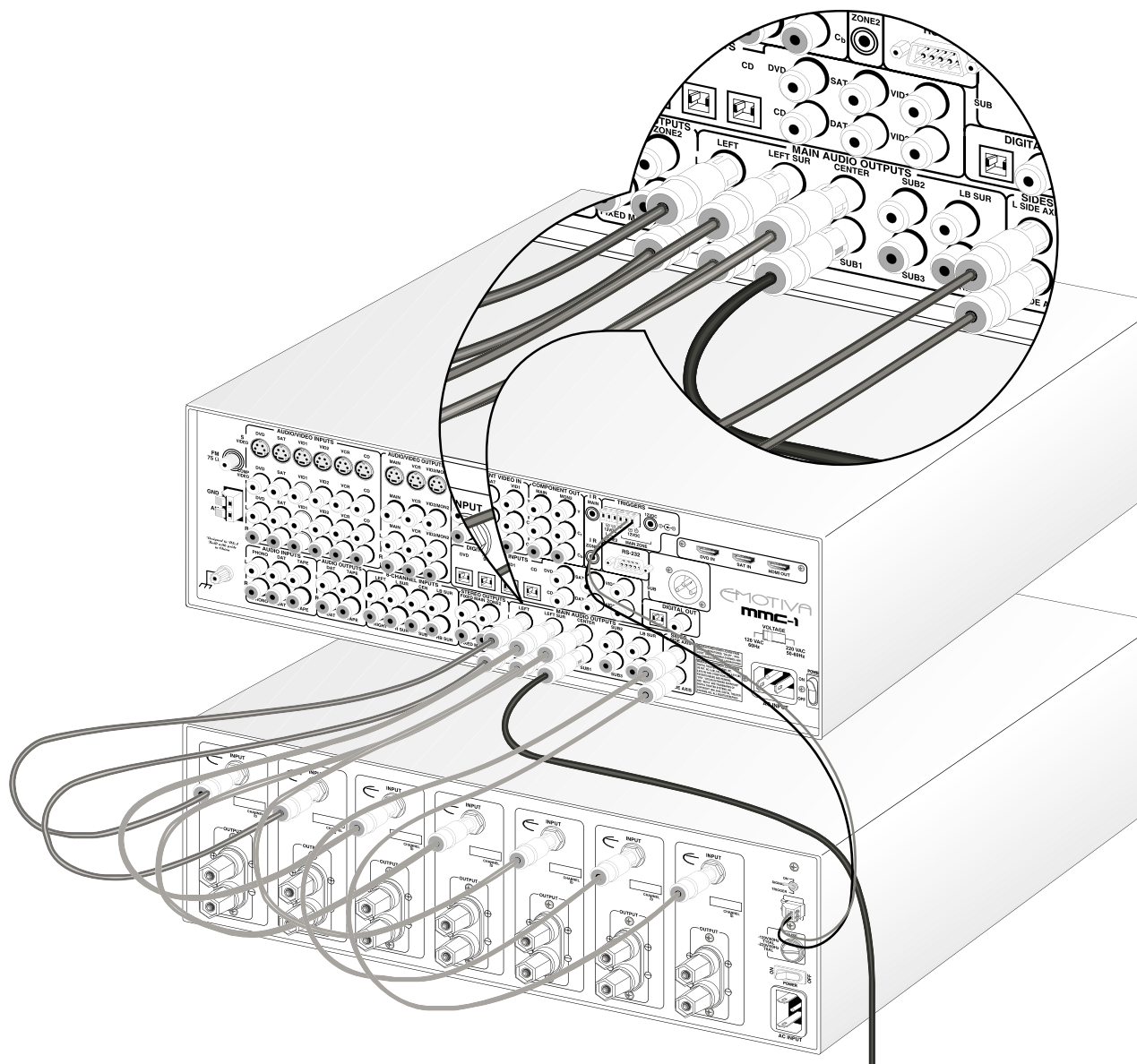
Before setting up your new system, please consider the following:

- Always make sure the IPS-1 is turned off before making or changing ANY connections.
- Whenever possible, route the power cords away from the signal cables or speaker wires to prevent any hum or interference heard in the speakers.
- Many RCA type patch cords can be a very tight fit and there is usually a preferred method of getting them off. Some have to be removed with a twisting action. Be gentle or you may damage the jacks of your IPS-1, the cables themselves, or other components.
- Many audiophile signal cables are intended to be hooked up in one direction. If this is the case the cables will be marked with arrows the direction of signal flow.
- It is usual for the right channel RCA patch cord plugs to be red and the left channel connections to be white, grey, or black (depending on the cable brand). RCA connectors that are gold will be designated with a colored band to designate the channel.

Connection Diagrams

Input Connections

If your preamplifier has RCA outputs, it can easily be connected to the amplifier inputs as shown. The amplifier will boost the preamplifier's output, up to a level suitable for driving speakers.



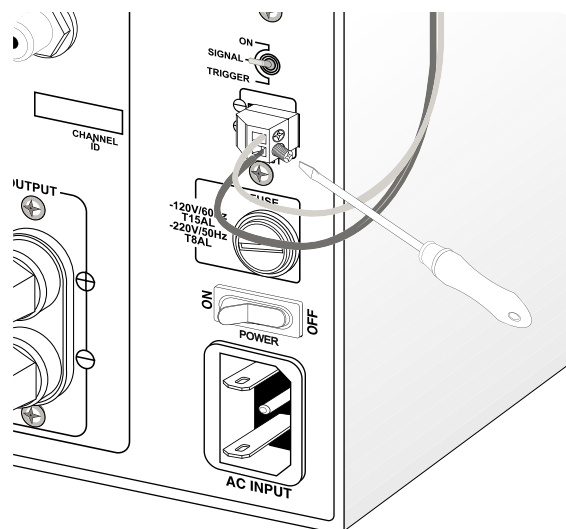
Make sure that the positive speaker wires do not touch the negative speaker wires, or any chassis metal. This will cause a short circuit and may activate the protection circuitry. The 12 VDC trigger connection shown can be used to turn the amplifier on when the preamplifier turns on. This is the preferred method of activating the IPS-1. Alternatively, you could use the amplifier's SIGNAL switch position. The amplifier will then automatically turn on when a preamp audio signal is received.

12V Trigger Connections

The 12 VDC trigger connection shown can be used to turn the amplifier on when the preamplifier turns on. This trigger will actually trigger with any switched DC Voltage from 5-24VDC, however the majority of home theater components use a standard 12 VDC trigger connection for this function. This is the preferred connection as it has the greatest degree of reliability.

Never switch anything that plugs directly into the wall with this trigger connection. This action will damage the unit and VOID THE WARRANTY.

If unable to use the trigger connection to activate the IPS-1, you could alternatively use the amplifier's SIGNAL switch position. The amplifier will then automatically turn on when a preamp audio signal is received.

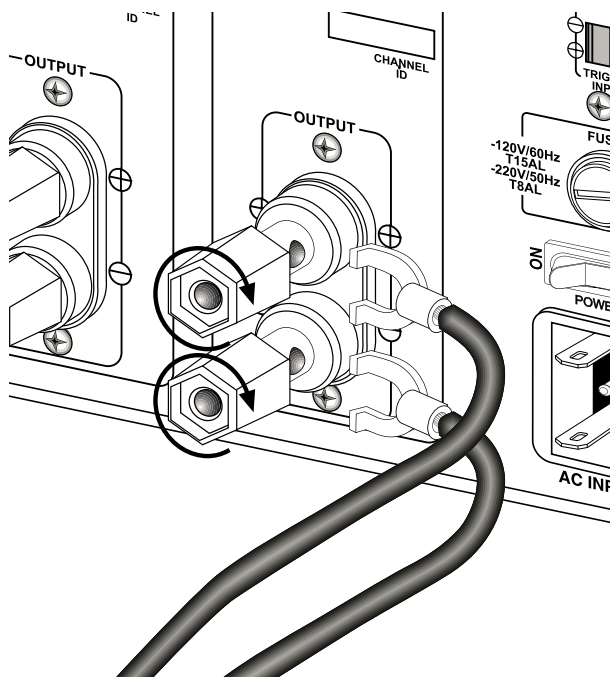


The trigger connection plug and turn-on selector switch are located on the top right corner of the back of the IPS-1 chassis

Speaker Output Connections

The speaker output terminals for each amplifier channel are located just below the RCA input jack and channel ID area. The top post of each binding post pair is the positive output, and connects to the positive (red) post of your speaker. The bottom post of each pair is the negative, and connects to the negative (black) post of your speaker.

Regardless of the configuration used for the IPS-1 amplifier channels, proper connection of each speaker is essential. The 5-way binding posts can accept bare wire, spade terminals, and dual or single banana connectors. Spade connections or banana plugs ensure a simple, solid fit in the terminal whereas bare wire may be awkward when the terminal is screwed down to compress the wire into place. Keep in mind that if you use "dual banana" plugs and "stack" them, you will be creating a parallel connection.



Spade connections ensure a tidy and safe connection to each speaker output binding post.

Series and Parallel Speaker Connections

Whenever connecting more than one speaker per channel to an amplifier (regardless of the brand), you must consider the way in which the amplifier will be impacted by adding the additional speaker(s). Additionally, speakers with dual voice coils also apply to this consideration. Two voice coils in a single speaker also cause different reactions from an amplifier depending on the way in which they connect to the amplifier.

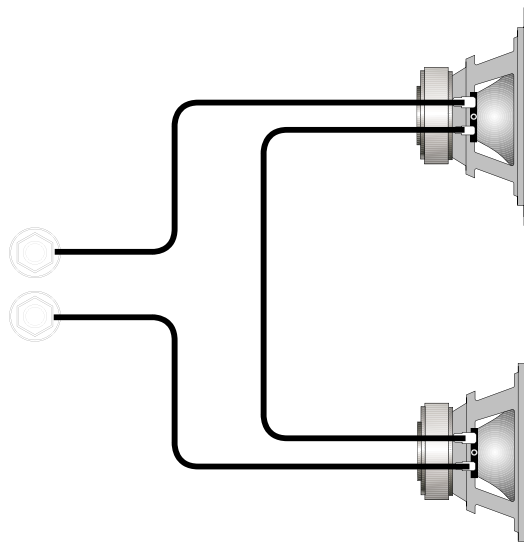
The connection of more than one speaker per channel will tend to degrade the speaker's frequency response and may make the amplifier run hot. For the best sonic results, use one speaker per amplifier channel. If you must connect more than one speaker per channel, there are two methods in which to do so: Series or Parallel.

Series

A **series** connection is established when voice coils are connected in a string – end to end – so there's only *one* way for audio signals to flow "in" and only one way for audio signals to flow "out". For example, if you were to series-connect two speakers to the front right channel of the amplifier:

- The positive output terminal of the right channel connects to the positive input post of the first speaker.
- The negative input post of the first speaker connects to the positive input post of the second speaker.
- The negative input post of the second speaker connects to the negative output terminal of the right channel.

The total impedance of speakers in series is found by adding their impedances together. For example, two four ohm speakers in series is an eight ohm load. Series connections are easier on the amplifier than parallel connections as the total impedance is higher than driving a single speaker.



An example of a SERIES connection between two speakers

Parallel

A **parallel** circuit is established when voice coils are connected in a way that there are multiple paths for audio signals to flow "in" and multiple paths for audio signals to flow "out". When speakers are connected in parallel, the total resistance at the amplifier is proportionally divided based on the value of each individual voice coil resistance. The term "divided" simply means all of the values together in parallel are a **SMALLER** value than each all by itself. For example, if you were to parallel connect two speakers to the front right channel of the amplifier:

- The positive output terminal of the right channel connects to the positive input post of the first speaker **and** to the positive post of the second speaker.
- The negative output terminal of the right channel connects to the negative input post of the first speaker **and** to the negative post of the second speaker.

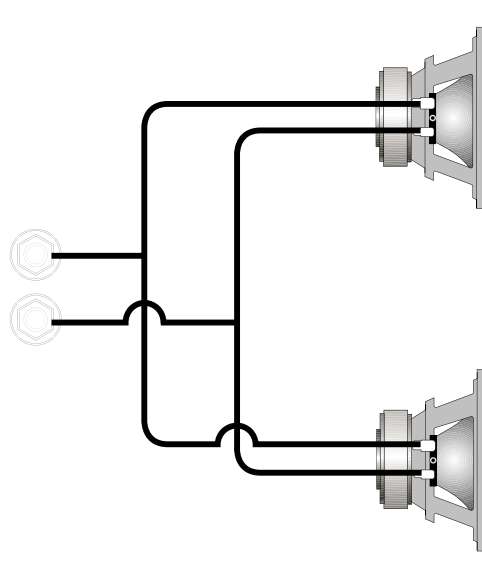
The total impedance of equal speakers in parallel is found by dividing the impedance of one speaker by the number of speakers. For example, two eight ohm speakers in parallel is a four ohm load (eight ohms divided by two), four eight ohm speakers in parallel is a two ohm load (eight ohms divided by four).

Parallel connections are harder on the amplifier than series connections, as the total impedance is lower compared to driving a single speaker, and the amplifier must produce more current to drive them.

Ideally, the total average impedance should be no less than 4 ohms per channel. You must make sure that the lower impedance does not cause the amplifier to overheat, shut down, blow the line fuse, or pop your circuit breaker. If this happens, you should reduce the number of speakers wired in parallel, rewire them in series, or use more than one power amplifier.

Technical Note about Multiple Speaker Connections

Although there are two possible connection types discussed in this manual, it is imperative that with either connection type that you use loudspeakers of the same type and nominal impedance for these connections. In doing so, you have the most predictable outcome for your installation. When speakers of different nominal impedances and/or different bandwidths are used, there are many other acoustic problems that come into play in addition to complex impedance at the amplifier's speaker output terminals. If you must use multiple speakers on any individual amplifier channel, please use speakers as close to identical as possible.



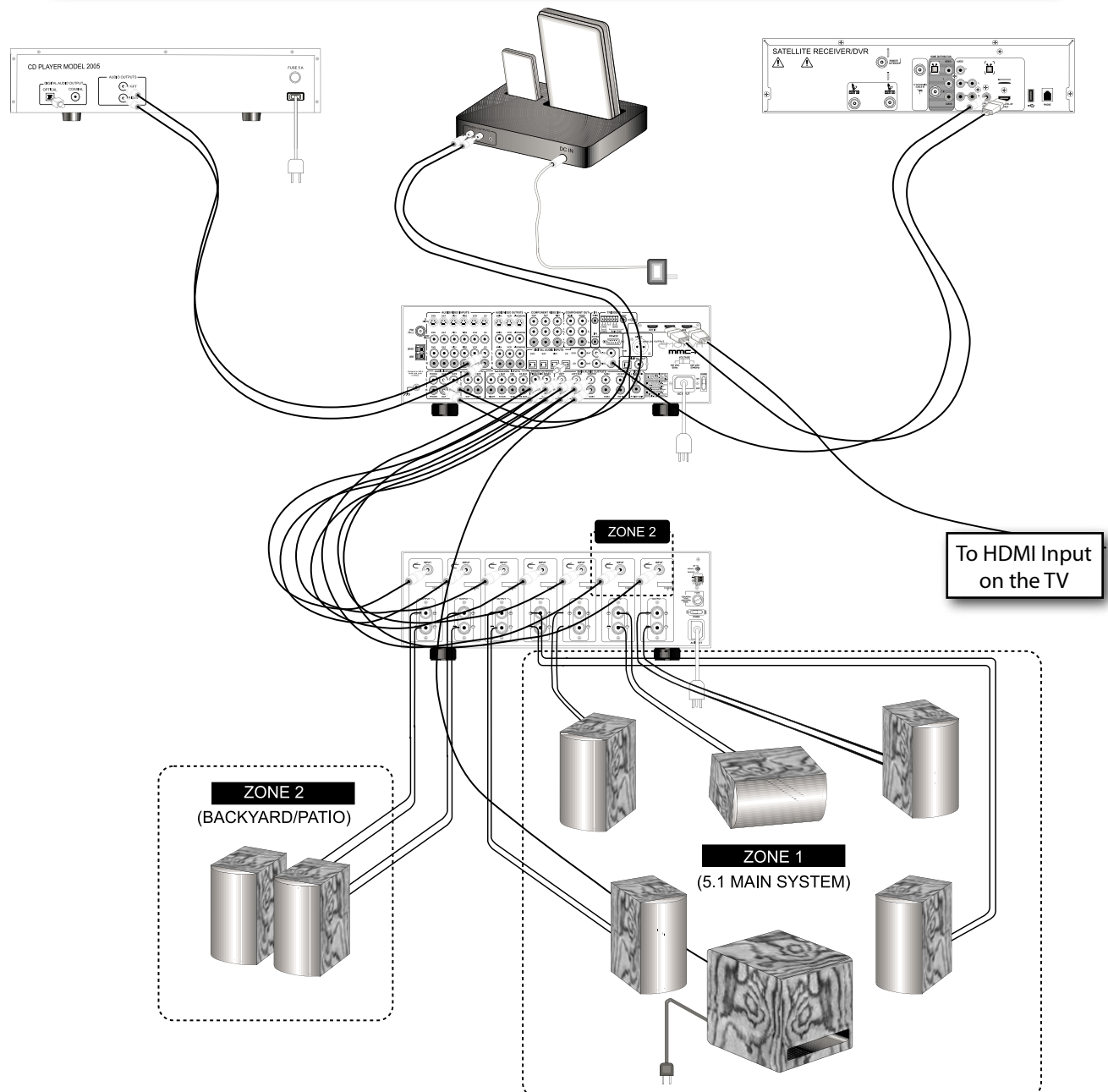
An example of a PARALLEL connection between two speakers

Flexible IPS-1 Applications

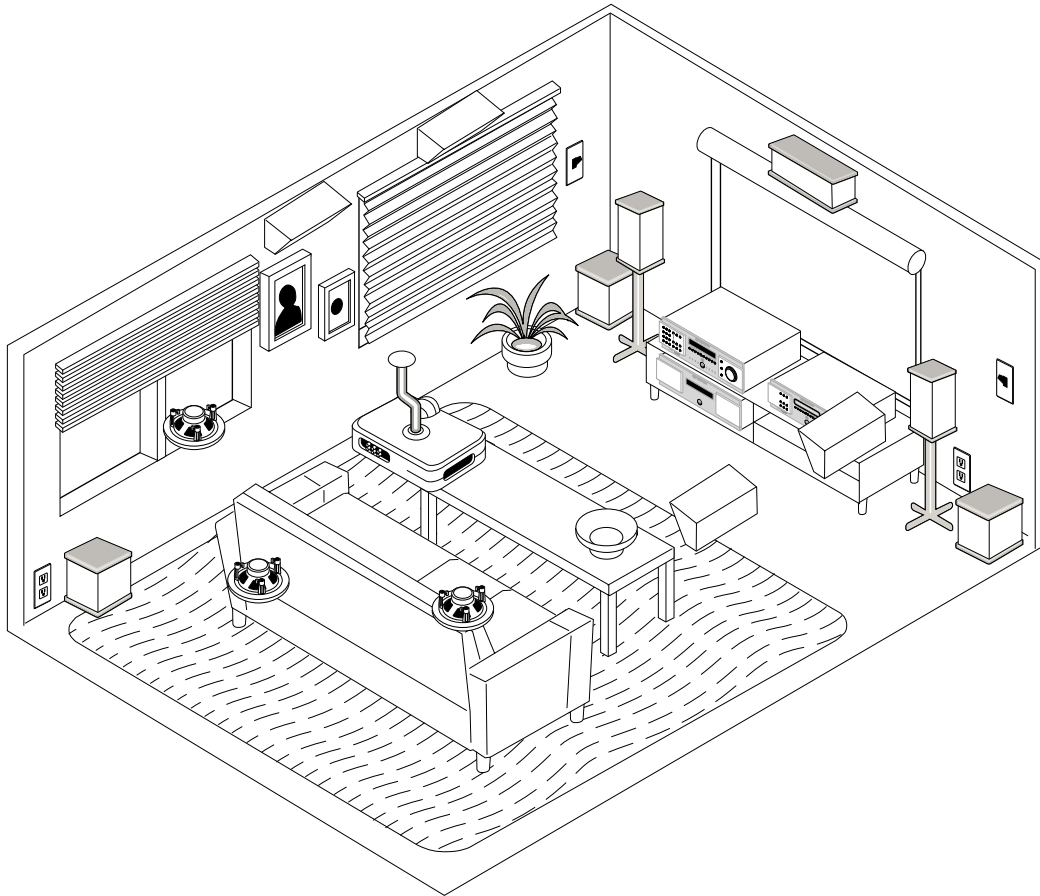
5.1 and Zone 2 Amplification

This example shows the IPS-1 with the companion MMC-1 preamplifier/processor used in a 5.1 and Zone 2 arrangement. If you are not intending to use side axis speakers in a 7.1 system, the IPS-1 amplifier is ideally suited for this configuration.

As an example, a CD Player, iPod with dock, and DVD player are shown as source inputs to the preamp. Obviously, the actual components you might connect depend on your own system.



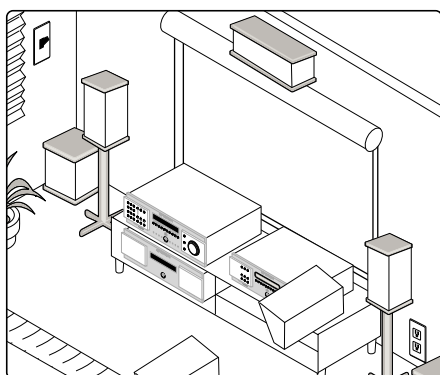
Speaker Placement Tips



Tips Before You Begin

Read this section thoroughly. There are a number of ways in which it may seem aesthetically pleasing to place speakers in a room that will ultimately result in a sound quality compromise. The placement of speakers is equally as important as the room itself. While there may be very little you can do about the room where your home theater is installed, you can choose placement of speakers within that room to maximize the sound quality of the system. Ultimately, this will give a much better result when you are enjoying your home theater and your new Emotiva IPS-1.

Overall, the best placement for front speakers is where the sound is directed at ear level. This means that the speakers themselves can be in positions lower (like small floor standing speakers) or higher (like in-wall or in-ceiling speakers) as long as the sound is "pointed" toward the listeners and preferably around ear level. This is not necessarily the case with the rear speakers or the side axis speakers. Read each of the sections carefully for the most appropriate positioning. A subwoofer is also a little challenging to install depending on the room. In multiple subwoofer installations, the positioning of the woofers to the listener as well as to each other is critical because there can be problems with cancellation if optimum placement is not observed.



Place LEFT, CENTER, and RIGHT main speakers at equal distances from the listening position.

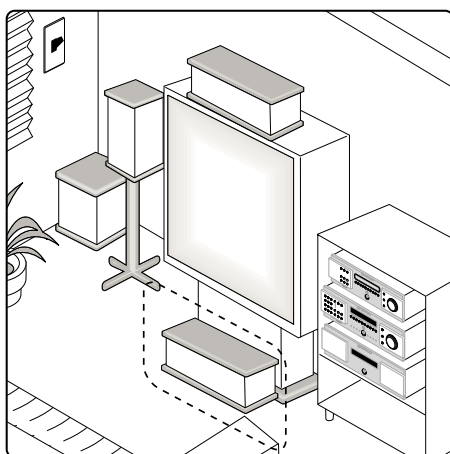
The Front Speakers

You should closely follow the placement recommendations of your speaker manufacturer, with the addition of the following points:

- The left and right front speakers should be positioned so that your TV is exactly centered between them. This will help focus your attention towards the screen.
- For the best overall imaging, the left speaker should be set exactly the same distance and angle away from your listening position as the right speaker. It is recommended that you use a tape measure to set them up to be the same distance away, within about half an inch tolerance.

If you have a smaller TV, the speakers should be no more than two feet away from the sides of the TV. If possible, have the center, left and right speakers at the same height (within two feet). This will help give a smooth transition when sound effects move from speaker to speaker.

Ideally, the speakers should be no closer than two feet from the rear and side walls, in order to reduce any reflections that might upset the imaging. If your speakers are closer than this, you can experiment by adding sound deadening material such as drapes on the walls to reduce any unwanted reflections.



Whenever possible, place the center speaker no more than 12" (25.4cm) above or below the front speakers

The Center Speaker

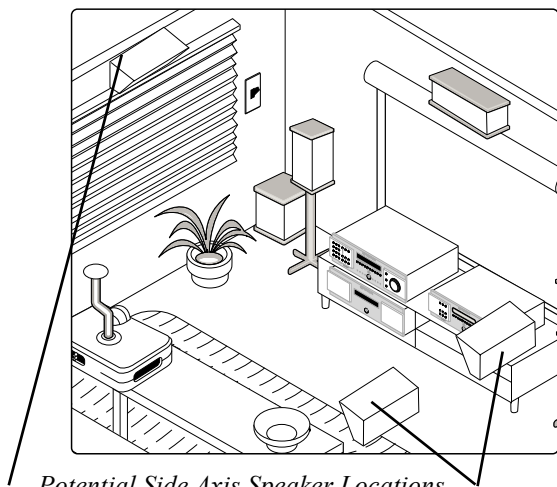
Most movie dialog will come from the center speaker, so careful positioning is an important part of a good home theater system. Your eyes and ears should focus your attention towards the center of the screen.

The center speaker can sit on top, or directly underneath the TV, as long as it is located on the centerline and not off to one side. Ideally you would try to maintain a deviation from the center line of the speakers of less than 12". This means the center speaker will not be lower or higher than 12" to the center measurement of the LEFT and RIGHT MAIN speaker center measurements.

Position the front face of the speaker close to the front edge of the TV cabinet. (The sound waves may otherwise reflect off the top of the TV cabinet and distort the center imaging).

In some systems, two center speakers are used; one on either side of the TV. As they are in mono, the result is a sound image that is positioned exactly at the screen center.

Side-Axis Speakers

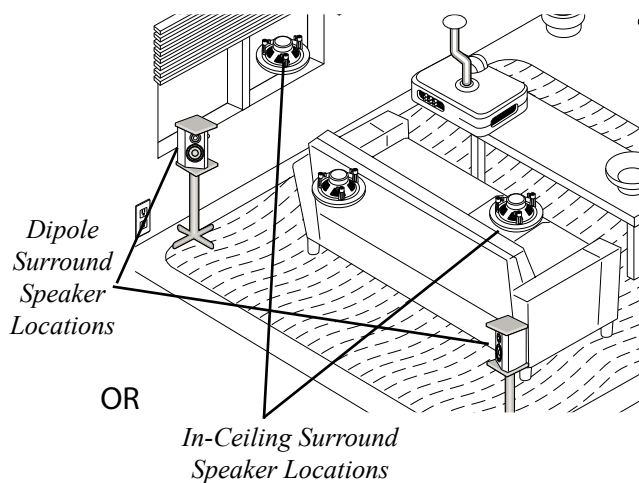


Some preamplifier processors feature side-axis channels which are matrixed and derived from the left and right front channels, so they are available in stereo as well as surround modes. If available as a feature, the processor should have a set-up menu to turn the SIDE-AXIS channels ON or OFF.

In the diagram to the left, typical placement of side-axis speakers is depicted by the speakers that appear to be “suspended” where walls are in the room. Another appears above the window on the left side of the drawing. Wherever you position

them, place these speakers along the side walls, close to the fronts. You can also angle them in towards your listening position for better results. You should not use a surround or effect speaker (such as a dipole) for side axis speakers. Direct radiating speakers will give the best result without interfering with the clarity and presence of the main speakers in the front left, center, and right sides.

The Surround Speakers



Place each surround speaker to be an equal distance away from your central listening position and keep them at least one or two feet above ear level.

The diagram to the left shows the use of dipole surround speakers. These are usually positioned to the side of your listening position. They radiate forwards and backwards and have a quiet null zone (the “apex” of the triangular shape) which should point towards the listener. The overall effect is that you cannot hear the direct sound from the surround speakers because

they don’t directly radiate into the listening space. Most manufacturers of dipole speakers intended for use as an effects or surround speaker have excellent details on optimum positioning for the best overall results based on the application.

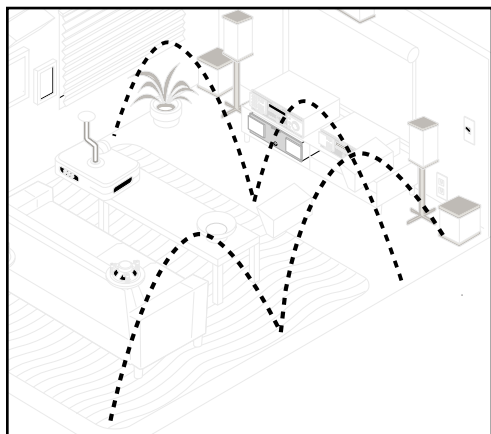
Conventional surround speakers can be placed behind the listener, on the rear walls or the side walls or in the ceiling (as the diagram indicates). Adjust the angle so they do not point directly at the listener but cause reflections from the sidewalls, floor, or the ceiling. Avoiding direct aim at the listening positions will give the effect of broadening the rear soundstage so that you cannot distinguish the sound as coming from a small box on the wall but from a larger area behind you.

Surround Back Speakers

Many preamplifier processors feature additional outputs for surround back speakers. These create a wonderful sense of realism in surround effects during playback of Dolby Digital EX, Dolby Pro Logic IIx, and DTS ES.

Ideally, all the surround speakers should be of the same make and model as the surround speakers, and fitted at similar heights to produce a smooth continuous sound field.

Subwoofer Location



*Standing waves depicted in a room.
"Peaks" are good, "Dips" are bad.*

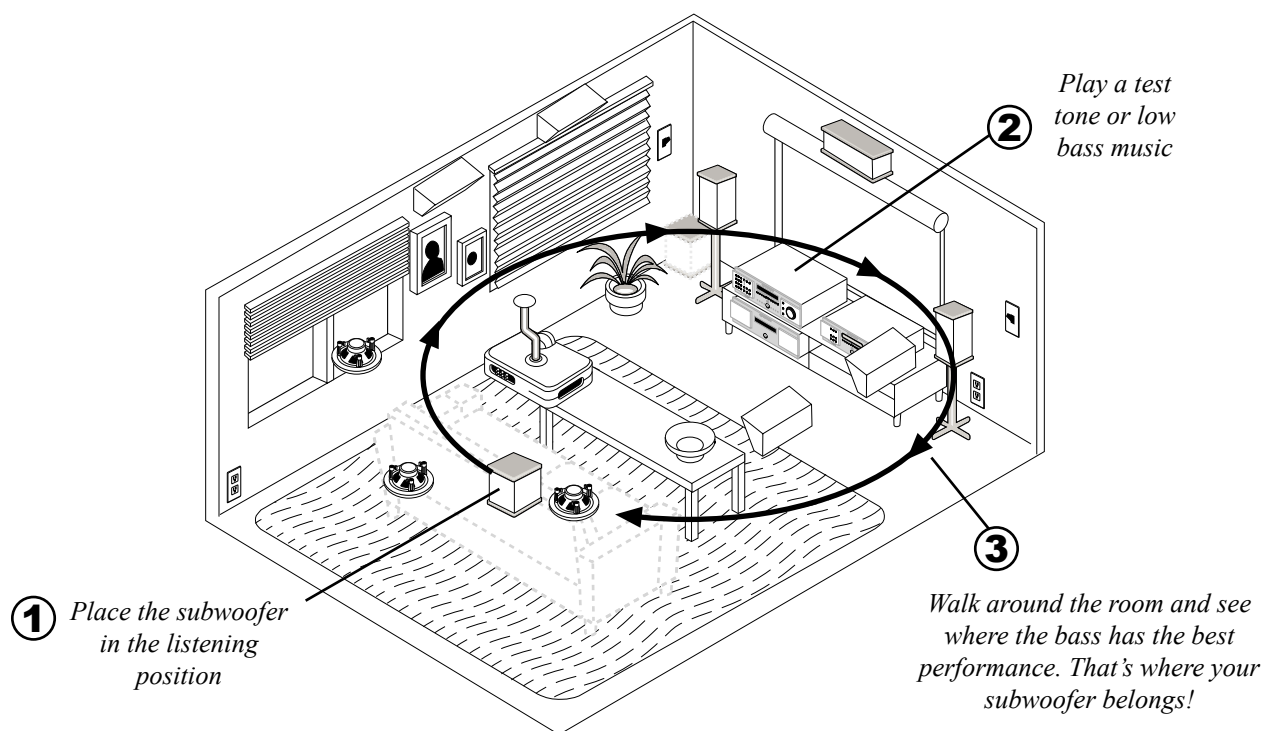
Although subwoofers are normally configured with their own internal power amplifier (rather than using the IPS-1), we know you will probably use at least one subwoofer in your home entertainment system. As such, it's important to understand correct subwoofer placement so that you get the most out of the other speakers connected to the IPS-1 Modular Power Amplifier.

A subwoofer typically sounds best in a corner with at least 5 feet of wall to either side. Due to the short wavelengths of high-frequency sounds, they don't interact strongly with the size and shape of a room. Lower frequencies long wavelengths that can cause "Standing wave" problems. Placing the subwoofer in a corner usually creates the best possible situation for the sound to interact with the room, allowing

even distribution of the bass frequencies. Often the corner that offers nearby placement to the front speakers may yield the best results, but you should try several locations before settling on just one.

The best location for a single subwoofer can be found by playing a couple of different low frequency test tones (or some music with heavy sustained bass passages) and proceeding with the following easy 1-2-3 process:

1. Place the subwoofer right on the seat of your couch or listening chair.
2. You can then either run the calibration (noise) signal through it, or simply plug the analog outputs of a CD player directly into your subwoofer's low-level inputs. Turn down the subwoofer's volume level before turning on the CD, then play the test tones or some music with heavy sustained bass passages.
3. Walk around the room, standing in all the positions where you might be able to place the subwoofer. Again, this is usually near the corners of the room. Try locations fairly close to the front speakers.



Notice where in the room the bass output from the subwoofer sounds the loudest. Shut things down and install the subwoofer there. This is the best position for the subwoofer. The bass will sound the best when you are sitting in your normal listening position.

If your subwoofer seems to sound best when it is near the front speakers (often the case), keep in mind that most television sets may not react well to the subwoofer if it is not built specifically for use in a home theater application. While most front Left/Center/Right speakers do have shielding when intended for use in a home theater application, subwoofers are not always magnetically shielded and may damage the television if placed too close. If you want to check if this will be a problem, select an unused video input on the television to bring up a single color screen. If you see any color distortion anywhere on the screen, an unshielded speaker is too close to the screen and should be moved away from the television until the color distortion disappears.

Note - most powered home subwoofers feature a phase control with a range between 0-180 degrees. This is present so that in situations where the optimum location is not particularly desirable, you can locate the subwoofer elsewhere nearby and make a slight adjustment to the phase so that sound arrives to the listener at the same time as the other speakers. Ideally, sound arriving at the same time allows the subwoofer to create the illusion of the main speakers making the bass. This is what enhances the listening experience.

Troubleshooting Guide

The Emotiva IPS-1 is expertly designed and built to provide years of trouble-free performance. Most problems that occur can usually be solved by checking your setup or making sure that the audio and video components connected to the amplifier are on and fully operational.

The following information will help you deal with common setup problems you may experience during normal use of your unit. If problems persist, contact your Emotiva Dealer for help.

No Sound (from one or more speakers connected to the IPS-1)

- *Speaker cables may have come undone. Turn off your system and check the cables, and tighten the amplifier and speaker binding posts.*
- *The system may have one or more damaged audio cables.*
- *The preamplifier volume level is low for the channels concerned. Recheck the preamplifier calibration procedure.*
- *A preamplifier Mute switch may be on, or an external processor loop or a tape monitor loop is engaged.*
- *Check that your preamplifier or source is running the correct surround sound mode. Maybe it is set for 2-channel stereo when you were expecting 5.1 surround sound.*
- *Check in case any missing channels have been turned off in a preamplifier setup menu. For example, the center amplifier channel will not receive a signal if the preamplifier has been set to "Phantom."*
- *The Auto/on/off switch on the IPS-1 might be in the OFF position.*
- *Check to see that the ON/OFF rocker switch at the back of the unit is in the ON position.*
- *The fuse on the unit may have blown .*

The amplifier shuts down often or the line fuse blows often

- *Check that the positive and negative speaker wires are not shorted together.*
- *Make sure that no speakers are shorted internally. If you have an ohm-meter, disconnect the speaker wires and measure the resistance between the speaker's positive and negative terminals. If the reading is less than 2 ohms, the speakers may have an internal short or simply be too low a nominal impedance. Measure all speakers and check their impedance specifications for compliance with the IPS-1 operational characteristics.*
- *If you have connected speakers in parallel, the overall impedance may be too low. It is recommended that you rearrange the speakers in series to increase the overall impedance, thus taking some of the load off the amplifier.*
- *Make sure that the amplifier has good ventilation and is not overheating. Allow good airflow underneath wherever possible. If the amplifier is in a closed rack, open up the rear panel or use a quiet fan for improved ventilation.*

Poor Bass Performance From Full Range Speakers connected to the IPS-1

- *Make sure that your preamp does not have the bass (tone control) level turned down.*
- *Many surround preamplifiers have controls which can direct all the bass to subwoofers or let your main speakers play the full range. Make sure that the preamplifier has been correctly set. If you are not using a subwoofer, set the speaker options to "Large" where possible.*
- *Check that the speaker wires have been connected correctly: Make sure that the positive of each speaker connects to a positive output of the amplifier, and the negative of each speaker connects to a negative output. If one speaker is wired incorrectly, then it will be "out of phase" with the others, resulting in poor bass performance. In this condition, the speakers' energy is fighting the other rather than combining.*

Turn-on and turn-off thumps

- *Plug the amplifier into an unswitched AC outlet, and use the SIGNAL position of the turn on switch at the back of the amplifier. This will allow the amplifier to turn on and off silently.*

"Hum" Noises in the Speakers

This problem is more than likely caused by a "ground loop" in your system, rather than a fault in the IPS-1. Follow these steps to isolate the main cause of the hum, there may even be more than one. Remember to turn off all components in your system, including the IPS-1, before disconnecting or connecting any cables.

- *Remember to turn off all components in your system, including the amplifier, before disconnecting or connecting any cables during troubleshooting.*
- *Try to have all of your equipment on the same electrical outlet or circuit. Group all the low power components (preamp, CD player, DVD etc.) on a single outlet or power strip. This is provided that the overall current draw from your equipment does not exceed the rating of the outlet or breaker.*
- *Disconnect all cables which come from outside the room, and check if the hum goes away. This includes such connections as cable TV, satellite TV, or roof top antennas. Make sure that they are disconnected where they first enter the room, so they are making no connection to the preamplifier or the TV, or any other component. If the hum is caused by the cable TV line, then you will need a "ground loop isolator." This is an inexpensive device fitted in line with the coaxial cable feed. Contact your cable company or your Emotiva Dealer for assistance.*
- *Disconnect all connections from the preamplifier to your TV, VCR or DVD.*
- *As a test, disconnect any other component which has a grounded power cord.*
NOTE: Never remove the ground pin from any power cords (if present). This is very dangerous.
- *If the hum persists, disconnect all the source components one at a time from the back of the preamplifier, until you identify the problem.*
- *Try moving the speaker cables away from any power cords. Try just one speaker, connecting it to each amplifier channel and see if one channel is bad.*

- *Check that the interconnect cables to the amplifier do not have any broken connections. The best way to do this is to substitute a known good connection for the suspect connection. If you reverse the cables and the problem goes away, the cable may be damaged or broken. This is possible even if you can't physically see the break as the strain for pulling on audio cables can sometimes break the wire internally.*

Ground loop isolators are available for both audio and video devices as well as the cables that interconnect those devices. You can ask your Emotiva Dealer for assistance. Although this is not always an ideal solution, the grounding differences between certain home entertainment components sometimes require ground loop isolators. This is the exception rather than the rule.

Other Probable Causes of Noise

Speaker noise may also be caused by interference or noise on your AC line. Make sure there are no large appliances sharing the line, halogen lamps, or light-dimming Triac devices.

- *Try connecting your system to another AC socket on a separate line.*
- *If the hum is heard from within the IPS-1 and not through the speakers, this may also be caused by interference on the AC or DC lines. The power transformers may turn this interference into an audible noise. Internal hum can be made worse by a shelf or cabinet resonating, so try moving the IPS-1 to another shelf.*
- *Try moving your components further away from the TV, especially if you ever notice the screen has changed color in the area closest to the component.*
- *If you have very high efficiency speakers, these may tend to reveal noises which other speakers do not.*

One or more RED lights on the Front Panel are On

Each RED light indicates a fault condition for the corresponding power module. A fault condition is one or more of the following:

- *Excessive Operating Temp*
- *Excessive Current (Short Circuit)*
- *DC on the Outputs*

An excessive temperature fault can be reset by allowing amp to cool and cycling power on/off button on the front panel. Excessive current (short circuit) can be reset by removing the cause of the short and cycling power on/off button on the front panel. DC at output is a possible fault condition that is equipment related and requires technical assistance. Please contact Emotiva if you have repeated problems causing the RED front panel light to illuminate that are NOT thermal or short circuit related.

For any other problems, please contact Emotiva for assistance.

Technical Specifications

<u>Rated Power Output:</u>		<u>@120VAC</u>	<u>External Trigger:</u>	5-24VDC
@ 1% THD	8 Ohms:	150W RMS x 7	<u>DC Offset:</u>	Less than 1mv Servo controlled
@ 0.1% THD	8 Ohms:	140W RMS x 7		
@ 1% THD	4 Ohms:	200W RMS x 7		
@ 0.1% THD	4 Ohms:	175W RMS x 7		
		Stable to 2 Ohms	<u>Crosstalk:</u>	
			Between ANY channels	>120dB
<u>Frequency Response:</u>			<u>Electrical Requirements</u>	
+/- 0.1 dB:		20 Hz-20 kHz	120VAC-60Hz or	
+/- 3 dB:		10 Hz-100 kHz	240VAC, 50-60Hz	
			2200 Watts	
<u>Signal to Noise Ratio</u>			<u>Power Consumption</u>	
(Un-weighted):		105 dB	(Standby)	
			(At Idle)	
			3 Watts	
			55 Watts	
<u>Distortion (THD):</u>			<u>Dimensions</u>	
(20Hz-20kHz):		<0.015%	IPS-1w/Feet	
80kHz Measurement Bandwidth			17"Wx6Hx16"D	
<u>Damping Factor:</u>			<u>Chassis Type</u>	
(into 8 Ohms):		>300	3RU chassis	
<u>Gain:</u>			<u>Raw Weight</u>	
(1.7V Sensitivity):		+27dB	<u>Shipping Weight</u>	
			69.5 lbs (31.6 kg)	
			82.5 lbs (37.5 kg)	
<u>Input Impedance:</u>		>20K Ohms		

Limited Warranty

Emotiva is proud to design and manufacture quality products for the home audio and home theater enthusiast. Your IPS-1 Integrated Power Amplifier has been crafted to perform flawlessly for many years. As a result of this quality and craftsmanship, Emotiva offers the following warranty to owners of the IPS-1.

Emotiva Audio warrants the IPS-1 to be free of defects in materials and workmanship for a period of FIVE YEARS from the original date of purchase. The following items are excluded from, or will void this warranty:

- 1) *Damage to the IPS-1 caused during shipment and handling.*
- 2) *Damage to the IPS-1 caused by accident, misuse or abusive operation contrary to the instructions specified within this manual.*
- 3) *IPS-1 units that have had the serial numbers defaced, modified, or removed.*
- 4) *Damage to the IPS-1 resulting from a modification of, or attempted repair by any person or company not authorized by Emotiva.*
- 5) *Any IPS-1 unit purchased from a non-authorized dealer.*
- 6) *Emotiva does not assume liability for loss of use, or damage to, associated or connected equipment.*

Service Assistance for the IPS-1

Please note that BEFORE sending your IPS-1 in for repair, you MUST call Emotiva and obtain a returned material authorization (RMA) number. Before contacting Emotiva to begin the return process, please have as detailed a description of the problem(s) you are experiencing and the conditions under which the problem(s) occur. Additionally, please be sure to check the troubleshooting guide in this manual to rule out the possibility of something simple you may have overlooked. Please remember, this is a complicated product and most instances of perceived product failure are the result of improper set up or operation. Emotiva and its dealers will help you ascertain whether you have an operational problem or product defect.

Once you have obtained the RMA number, you must print this clearly on the outside of the box so it will be possible to determine from whom the IPS-1 came once it arrives at Emotiva. Parcels arriving without an RMA number will be refused and returned freight collect.

Please send your repairs with RMA number to:

Emotiva

Attn.: Repair Department

106 Mission Court, Suite 101

Franklin, TN 37067

Reference - (Put your RMA number in this spot)

Emotiva Disclosure

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EMOTIVA

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